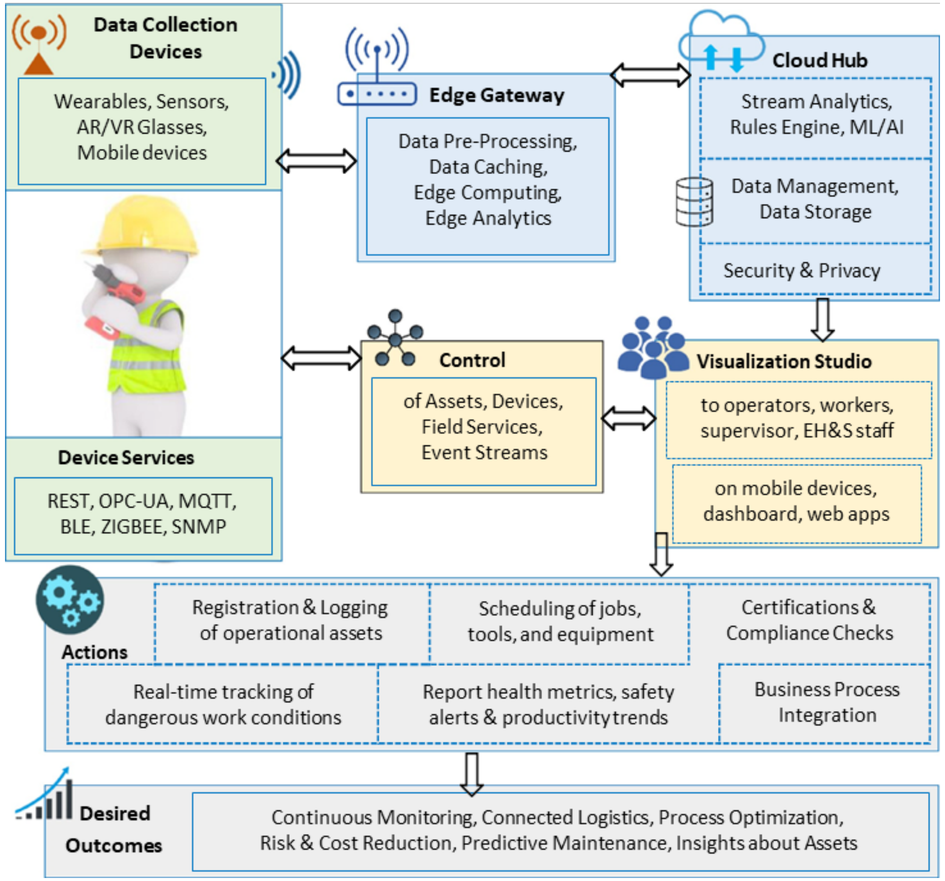
Data Collection Devices
Wearables, Sensors, AR/VR Glasses, Mobile devices
Edge Gateway
Data Pre-Processing, Data Caching, Edge Computing, Edge Analytics
Cloud Hub
Stream Analytics, Rules Engine, ML/AI
Data Management, Data Storage
Security & Privacy
Control
of Assets, Devices, Field Services, Event Streams
Visualization Studio
to operators, workers, supervisor, EH&S staff
on mobile devices, dashboard, web apps
Device Services
REST, OPC-UA, MQTT, BLE, ZIGBEE, SNMP
Actions
Registration & Logging of operational assets
Scheduling of jobs, tools, and equipment
Certifications & Compliance Checks
Real-time tracking of dangerous work conditions
Report health metrics, safety alerts & productivity trends
Business Process Integration
Desired Outcomes
Continuous Monitoring, Connected Logistics, Process Optimization, Risk & Cost Reduction, Predictive Maintenance, Insights about Assets

Figure 6. Architecture of a connected worker solution. The data collection devices use different device services to connect to the edge gateway for data preprocessing, caching, edge computing, and edge analytics. The cloud hub is responsible for data management, storage, security, and privacy. There are capabilities for streaming analytics with rule engines and AI/ML algorithms. The visualization studio displays the analyzed results on the dashboard and sends notifications to operators, supervisors, safety personnel, and workers. The strategies to control assets, devices, field services, and event streams are suggested by predictive algorithms. Finally, action items are executed to achieve the desired outcomes.

Patel, V., Chesmore, A., Legner, C.M. and Pandey, S. (2022), Trends in Workplace Wearable Technologies and Connected-Worker Solutions for Next-Generation Occupational Safety, Health, and Productivity. Adv. Intell. Syst., 4: 2100099. https://doi.org/10.1002/aisy.202100099
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